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July 27, 2004

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Dear BCT Members:

Enclosure (1) is provided for your records and information regarding the Responses to Comments on the Draft Final Historical Radiological Assessment, Volume II, History of General Radioactive Materials, 1939 – 2003, Hunters Point Shipyard, San Francisco, California.

Should you have any concerns with this matter, please contact the undersigned at (619) 532-0930 or Mr. Keith Forman at (619) 532-0913.

Sincerely,

G. Patrick Brooks

G. PATRICK BROOKS
Lead Remedial Project Manager
By direction of the Commander

Enclosure (1) Responses to Comments on the Draft Final Historical Radiological Assessment, Volume II, History of General Radioactive Materials, 1939 – 2003, Hunters Point Shipyard, dated July 27, 2004.

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Responses to Comments on the Hunters Point Shipyard, San Francisco California "Draft Final Historical Radiological Assessment, Volume II, Use Of General Radioactive Materials, 1939-2003, February 2004"

July 27, 2004

NAVAL SEA SYSTEMS COMMAND
RADIOLOGICAL AFFAIRS SUPPORT OFFICE
Yorktown, Virginia

DEPARTMENT OF THE NAVY
Southwest Division
Naval Facilities Engineering Command
San Diego, California

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ACRONYMS AND ABBREVIATIONS

AEC	Atomic Energy Commission
Bi-214	Bismuth-214
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
Cs-137	Cesium-137
DTSC	California Department of Toxic Substances Control
e-mail	Electronic mail
EPA	U.S. Environmental Protection Agency
FUDS	Formerly Used Defense Sites
G-RAM	General radioactive material
HPS	Hunters Point Shipyard
HRA	Historical Radiological Assessment
IR	Installation Restoration Site
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
NPL	National Priorities List
NRC	U.S. Nuclear Regulatory Commission
NRDL	Naval Radiological Defense Laboratory
Pb-214	Lead-214
Po-214	Polonium-214
Po-218	Polonium-218
PRG	Preliminary remediation goal
Ra-226	Radium-226
RASO	Radiological Affairs Support Office
RI	Remedial investigation
Rn-222	Radon-222
RPM	Remedial Project Manager
RWQCB	California Regional Water Quality Control Board, San Francisco Bay Region
Sr-90	Strontium-90
SWDIV	Naval Facilities Engineering Command, Southwest Division
Th-232	Thorium-232

RESPONSES TO COMMENTS ON THE HUNTERS POINT SHIPYARD, SAN FRANCISCO CALIFORNIA "DRAFT FINAL HISTORICAL RADIOLOGICAL ASSESSMENT, VOLUME II, USE OF GENERAL RADIOACTIVE MATERIALS, 1939-2003" SUBMITTED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY REGION IX

This document presents the Navy's responses to comments from the U.S. Environmental Protection Agency (EPA), on the "Draft Final Historical Radiological Assessment [HRA], Volume II, Use of General Radioactive Materials 1939-2002, Hunters Point Shipyard [HPS], San Francisco, California," dated February 2004. The comments were included in a letter dated 27 April 2004 from Michael Work, Remedial Project Manager, Super Division (SFD-8-3), EPA Region IX, to Naval Facilities Engineering Command, Southwest Division (SWDIV). The letter also included comments submitted by Mr. Steve M. Dean, EPA Region IX, Superfund Technical Support on 21 April 2004, and comments prepared by EPA's contractor, TechLaw, Inc.

The following comments were provided as an attached memorandum from Steve Dean (SFD-8-B), Superfund Technical Support to Michael Work (SFD-8-3), U.S. Department of Defense and Pacific Islands Section.

1. **Comment:** Section 1.6, Page 1-6: **The statement "...shipyard tenants, the surrounding community, and the environment are not at risk from previous radiological activities at HPS" is still a bit premature and overly optimistic statement to make in this document at this time. It may be more appropriate to state that "no imminent or substantial risk from previous radiological activities exists at HPS." The Navy has done a very good job of reducing most of the radioactive contamination at HPS to CERCLA's point of departure, i.e. on in a million excess lifetime cancer risk. But new prospective contaminated sites have been discovered and radiation remedial activities are still underway at HPS.**

   Response: The statement will be modified to "The review of previous radiological activities, cleanup actions, and release surveys has not identified any imminent threat or substantial risk to tenants or the environment of HPS, or the local community."

2. **Comment:** Table 303, Page 1 and 11: **Building 322 is listed twice in Table 3-3. On page 1 it is designated as a Marine Guard and Pass Office in Parcel A. On page 11 its use in Parcel D is listed as "unknown." Were there two Building 322's at HPNS or is the entry on page 1 erroneous? Parcel A also has a Building 822 that was a Sentry House. Does the Building 322 entry on page 1 belong on page 11 of the table?**

Response: Building 322 was originally located in Parcel D where it was used by the Naval Radiological Defense Laboratory's (NRDL) Instrument Branch. NRDL vacated the building in 1955. In 1959, the building was moved to Parcel A where it was used as the North Gate Pass Office. The Final HRA will list both areas as impacted sites and provide complete histories for both sites and corrected tables.

3. **Comment:** **<u>Section 6.4.12.3.6, Page 6-56</u>: US EPA Region 9 Superfund Program has never endorsed NRC's NUREG-1500 radiation dose based standard for any CERCLA release at a National Priorities List (NPL) site when unrestricted reuse is the remedial goal. The NRC's three mrem per year level should not have been applied to the "peanut" spill but rather Superfund's Preliminary Remediation Goals (PRGs) for radionuclides was the appropriate standard.**

Response: Section 6.4.12.3.6 provides a summary of historical information from the Allied Technology Group report of the removal action for the Building 364 "peanut" spill area. The release criteria for unrestricted reuse that are listed in the HRA were obtained from the survey report as historical fact and cannot be changed. However, the "peanut" spill was the subject of another investigation in 1998 as detailed in Section 6.4.12.6 and the EPA's PRGs were applied at that time.

4. **Comment:** **<u>Section 6.4.12.5, Page 6-58</u>: The other five Radium 226 (Ra226) daughters that should also be included in a Radium 226 excess lifetime cancer risk assessment are Polonium 218 (Po218), Bismuth 214 (Bi214), Lead 214 (Pb214), Polonium 214 (Po214), Polonium 210 (Po210).**

Response: Section 6.4.12.5 provides a summary of historical information from the referenced report. The Ra-226 daughters listed in the HRA were obtained from the survey report as historical fact and cannot be changed.

5. **Comment:** **<u>Section 6.4.12.5, page 6-59</u>: US EPA Superfund Program has developed a PRG/risk calculator that can be found at http://epa-prgs.ornl.gov/radionuclides/. This is the EPA approved method for radionuclide risk assessment. Since this section of the HRA includes a radium risk assessment using the RESRAD model, its should also include a ELCR assessment using EPA's risk calculator. Also, Radon 222 (Rn222) should be included in the Ra226 cancer risk. Cancer risk from Ra226 is dominated its gamma emitting daughters when applying the Superfund risk model but ALL daughters should be included in the assessment.**

Response: Section 6.4.12.5 provides a summary of historical information from the referenced report. The risk assessment described in the HRA was obtained from the report as historical fact and cannot be changed.

6. **Comment:** Table 6-2: **I performed a Google search on all the Operation Crossroads ships which had a disposition "unknown" designation in this table. The results of the search are as follows:**

- **Page 2 of 23: The ATA-124 was recommissioned the ATA-197 then later named the USS Sunnadin and was finally sold in February 1971.**
- **Page 3 of 23: The USS Benevolence was sunk in a collision off San Francisco on 25 August 1950, not 1965.**
- **Page 5 of 23: The USS Cebu was stored at the mothball fleet in Suisun Bay, California but final disposition from there is unknown.**
- **Page 7 of 23: The Creon was decommissioned in 8 June 1949.**
- **Page 12 of 23: The LCI(L)-1091 was sold in 1961 and converted to a fishing vessel.**
- **Page 17 of 23: PGM-25 was transferred to the Republic of China in 1946.**
- **PGM 29 was decommissioned and sold to Greece on 11 December 1947.**
- **PGM 31 was transferred to the Republic of China in March 1954.**
- **Page 18 of 23: The USS Quartz was sold to the Powell River Company on 23 Oct 1947. It is now a breakwater in Powell River, British Columbia, Canada.**
- **Page 22 of 23: The USS Wildcat was scrapped in the mid-1970s.**
- **Page 23 of 23: The YMS-354 and YMS-358 were sold to South Korea.**
- **The YMS-413 is listed twice in the table.**
- **The YMS-385 was sunk by a mine on 1 Oct 1944 off Ulithi, Caroline Islands which predates Operation Crossroads.**

Response: Table 6-2 will be updated with the results of your search with the following exceptions or additions:

- Page 2 of 23: The ATA-124 appears to have been transferred under Security Assistance Act to Argentina in 1947
- Page 12 of 23: The LCI(L)-1091 is currently the flagship of the USS LCI National Association. Privately owned.
- The YMS-385 appears to have been a transposition of YMS-358 inserted in the table at some point and will be deleted from the listing.

Additionally, one listing for YMS-413 will be deleted.

7. **Comment:** **Section 8.3.4.5: The Former Uses description of Building 322 in Parcel D does not match the notations made in Table 3-3 for B322 in Parcel D but rather compares to the notation for B322 in Parcel A. As stated in Comment 1, Building 322's location and use require further clarification.**

Response: Section 8.0 will be amended to list both Building 322 in Parcel A and the Building 322 Site in Parcel D with the appropriate descriptions for the buildings.

8. **Comment:** **Section 8.3.5.12: While surveying Building 521, I discovered Radium 226 (Ra226) paint on several dials and gauges on instruments inside the building. Ra226 should also be listed as a radionuclide of concern in B521.**

Response: Ra-226 will be added as a radionuclide of concern for Building 521.

9. **Comment:** **Section 8.3.5.13, Page 8-165: Do records indicate that the underground storage vault was sufficiently decontaminated to acceptable levels before it was filled with compacted sand and capped with concrete?.**

Response: Records describing the final radiological conditions of the vault prior to filling and capping were not discovered during research for the HRA.

10. **Comment:** **Section 8.3.4.17, Page 8-177: My recollection is that Building 707 was never leased as an animal clinic although the Navy had proposed doing so. I recall EPA objecting to allowing this facility being leased until it was properly cleared for radioactive contaminants.**

Response: The information on the lease of the building to Pet Express as an animal clinic was taken from Navy records of building leases at HPS. Information about EPA concerns about the lease was not found.

11. **Comment:** **Section 9.3, Page 9-3: The last sentence states "To date, no evidence has been identified that would indicate that shipyard tenants, the surrounding community, and the environment are at risk from previous radiological activities at HPS." I think this statement is an overly optimistic for this document to make. Low levels of some radionuclides that still remain in isolated areas at HPNS are probably due to previous radiological activities and contribute some, however small, incremental risk. However, the evidence does strongly suggest that there is no eminent or substantial risk to human health and the environment from these previous activities at HPNS.**

Response: The statement will be modified to "The review of previous radiological activities, cleanup actions, and release surveys has not identified any imminent threat or substantial risk to tenants or the environment of HPS or the local community."

The following comments were presented in an attachment to the original transmittal letter identified as "EPA Comments on the Draft Final Historical Radiological Assessment, Volume II, Hunters Point Shipyard, San Francisco, California, February 2004, SPECIFIC COMMENTS." Per the forwarding letter, these comments were prepared by TechLaw, Inc.

1. **Comment:** **<u>Table 3-3, Current and Former Facilities at HPS by Building Number and Section 8.3.4.5, Building 322 Site, Page 8-96</u>: In Table 3-3 Building 322 is listed as a building in Parcel A that was used as an "NRDL Instrumentation Laboratory" but there is also a Building 322 in Parcel D with unknown use. There are references to Building 322 on pages 6-27 and 6-36. It is unclear to which Building 322 these discussions refer. Further, there is no discussion of the Parcel A Building 322 in Section 8, but the Parcel D Building 322 site is included on pages 8-96 through 8-97. This reference includes a reference to the "North Gate Pass office," which is appropriate for the Parcel A Building 322 because it is located near the North Gate, but is inappropriate for the Parcel D Building 322. Please resolve the uses of each Building 322 and correct Table 3-3. If it is determined that Building 322 on Parcel A was used by the Naval Radiological Defense Laboratory (NRDL), please include it in Section 8 and indicate that a survey should be done of this building as soon as possible to facilitate the transfer of Parcel A to the City of San Francisco.**

   Response: Building 322 was originally located in Parcel D and used by the NRDL Instruments Branch. The building was relocated to Parcel A in 1959, where it was eventually used as the North Gate Pass Office. The appropriate sections of the HRA for the former Building 322 Site in Parcel D will be revised. Building 322 in Parcel A will be added to the appropriate sections of the HRA, including results of the recent radiological investigation that was conducted within and outside of the building.

2. **Comment:** **<u>Table 3-3, Current and Former Facilities at HPS by Building Number and Table 6-1, Sites Impacted by G-RAM Use by the Shipyard</u>: In Parcel E, Site IR-12 includes both the Salvage Yard and the Disposal Trench Area, but there are separate entries in Table 3-3. There also is a separate "Salvage Yard" line item in Table 6-1 that is not associated with any IR Site. Please resolve these discrepancies. If there is evidence to indicate that there is another salvage yard other than IR-12, please discuss this evidence in the text. Also, it is not clear where the disposal trenches are or why they were associated with IR-12.**

Response: Table 3-3 is a compilation of both radiologically impacted and non-impacted sites that have been historically identified at HPS. Sites may be identified in more than one location. The Final HRA will list the former uses for Installation Restoration Site (IR)-12 as Salvage Yard and Disposal Trench Area. Additionally, Section 8.3.5.32 will be modified to list IR-12 so that it includes both the Salvage Yard and the Disposal Trench area.

3. **Comment:** **<u>Facilities at HPS by Building Number and Table 6-5A, Sites Impacted by NRDL Use of G-RAM Through 1955</u>: Table 3-3 identifies Building 710 as a demolished latrine, but Table 6-5A identifies the Building 710 Site as NRDL "Sample Storage." In addition, Table 3-3 includes line items for 710 (latrine, demolished) and S-710 (Open Storage Area [Plate Rack]), so it is not clear if these refer to the same site. Please resolve these discrepancies.**

Response: Building 710 is correctly listed in Table 3-3 as a demolished latrine. The Building 710 listing in Table 6-5A is transposed and should read Building 701. The shipyard used the "S" designator to identify specific locations such as S-710, which is listed correctly in Table 3-3 as an Open Storage Area (Plate Rack). Table 6-5A will be corrected in the Final HRA.

4. **Comment:** **<u>Section 7.7, Impacted Site Example, Page 7-8</u>: The text indicates that this example building has a high potential for contamination in the drains and sanitary drainage system, but under migration pathways, the text indicates that there are limited means of contaminating subsurface soil and that an exposure to the public is unlikely. This assessment does not take into account the fact that many of the sanitary sewers at Hunters Point are cracked or have joints that are separated. The evidence for this is the numerous lines where groundwater has been entering the sanitary sewer and has been pumped by Lift Station A. Radioactive contaminants have also been found in manholes. Recently, the Navy has been blocking selected sanitary sewer lines to minimize the volume of groundwater being pumped. If the sewer lines are cracked, then the potential for radioactive contamination to be released to subsurface soils exists. Please consider the fact that many sanitary sewer lines are cracked and revise the text as necessary. Also, please consider that groundwater maps often indicate sinks and highs that are likely associated with cracked sewer and water supply lines. This information should be used to reassess the potential for release of contamination to subsurface soils for buildings where the drains and pipes are believed to contain radioactive contaminants. Please reassess the potential for contaminant release in the vicinity of any known or suspected sewer line damage.**

Response: The example provided in Section 7.7 was created to demonstrate assessment of an impacted site and does not reflect conditions specifically at HPS. The Navy is well aware of the poor condition of many sanitary sewers and storm drains at HPS. Preparation of the Final HRA will include a review of the Potential Contaminated Media and Potential Migration Assessments in Section 8.0, and the Navy will ensure that the condition of the sanitary sewers and storm drains are considered during these reviews.

5. **Comment:** **Section 8.3.2.6, Building 140 and Discharge Channel, Pages 8-30 and 8-31: It is unclear why sediment is not included as a potential contaminated media. The most likely potential for contamination appears to be sediment in the discharge channel and possibly in the pumps. The discharge channel was not investigated during the Remedial Investigation. Please include sediment in the potentially contaminated media list or explain why it should not be included. Also, please clarify if the discharge channel and pumps will be a focus during the scoping survey.**

Response: Section 8.3.2.6 lists Potential Contaminated Media for Building 140 and Discharge Channel as Structures and Drainage Systems. This would include any equipment (pumps) and residue in the equipment within the structure and any sediment within the discharge channel. This will be clarified in the Final HRA.

6. **Comment:** **Section 8.3.2.8, Building 146, Page 8-35 and 8-36: It is unclear why the contamination potential on page 8-35 is "likely," but the potential on page 8-36 does not exceed "low," when other buildings with an overall potential of "unlikely" also have a "low" potential for contamination in media and potential migration pathways. Please explain or resolve this inconsistency.**

Response: The potential contaminated media and potential migration pathways assessments are based on the history of each individual site. Building 146 was used for radioactive waste storage and turn-in of radioluminescent devices. References indicate the shipyard did a survey of the building during closure in 1974 and found no contamination. A Class 3 survey of the building was conducted during the Phase V Investigations in 2002, and no contamination was found. However, the Class 3 survey was conducted before HRA research discovered the building was used for turn-in of radioluminescent devices. Because radioactive contamination is consistently found in areas where radioluminescent devices were handled, the contamination potential is listed as likely. Since previous surveys have not found any contamination, potential contaminated media and potential migration pathways are listed as low for structures.

Based on this and other similar comments, each impacted site assessment in Section 8.0 will be reviewed and modified as necessary to ensure consistency and clarify any misconceptions in the Final HRA.

7. **Comment:** **<u>Section 8.3.2.11, Drydock 6, Section 8.3.2.12, Drydock 7, Pages 8-42 through 8-48 and Section 8.3.3.10, Drydock 2, Section 8.3.3.11, Drydock 3, Pages 8-78 through 8-82</u>: It is unclear why sediment is not included in the list of contaminated media. These drydocks and drydock drainage systems and tunnels most likely contain sediment, given the fact that the tunnels beneath Dry Dock 4 were found to be full of sediment. Also, the interview with William Gravatt indicates that it was impossible to catch and containerize all of the Operation Crossroads Sandblast grit and that some of it went into the water at the ends of the drydocks. It is not clear that sediment in the drydock drainage systems and tunnels or off the ends of the drydocks has been investigated. Please include sediment in the list of potentially contaminated media or explain why it should be excluded. Also, please provide a more complete description of the investigations that have been performed at these dry docks, including whether the sediment that is in the dry docks and in the tunnels and drainage systems has been evaluated.**

Response: The assessments the drydocks identify structures and drainage systems as potentially contaminated media and potential migration pathways. These areas would include the drainage systems within the drydocks and sediment within the drainage systems or on the bottom of the drydocks. This will be clarified in the Final HRA.

8. **Comment:** **<u>Section 8.3.2.13, IR-07, Page 8-49 and Section 8.3.2.14, IR-18, Page 8-52</u>: The progressive fill history of IR-07 and IR-18 should be incorporated into these sections so that the potential for waste disposal from Operation Crossroads can be assessed. This fill history may also indicate where such disposal most likely occurred. Please obtain the Technical Memorandum, Interpretation of Fill Conditions at Installation Restoration Sites 07 and 18, Parcel B, include this information, and evaluate the figures and historical aerial photographs in this document to locate likely areas where Operation Crossroads material could have been disposed.**

Response: The technical memorandum "Interpretation of Fill Conditions at Installation Restoration Sites 07 and 18, Parcel B" was not reviewed during preparation of the HRA. The document will be obtained, and any pertinent information will be included in the Final HRA.

9. **Comment:** **Figure 8.3.3.1, Bldg. 203 Site Plan and Figure 8.3.3.1 FP, Building 203-Floor Plan: The Site Plan indicates that the shape of the building is very different than the floor plan. As a result, it is unclear whether the floor plan is actually for Building 203. Please resolve this discrepancy.**

Response: Figure 8.3.3.1 FP is incorrect. The correct figure will be inserted in the Final HRA.

10. **Comment:** **Section 8.3.3.2, Building 205 and Discharge Channel, Page 8-59: It is unclear whether the potential for contaminated sediment in the discharge channel and pumps was considered. As discussed in Specific Comment 7, the drainage tunnels beneath Dry Dock 4 were full of sediment and the Operation Crossroads sandblast grit was not fully contained. Please include sediment as a potentially contaminated media and discuss whether the scoping survey will cover these areas.**

Response: Section 8.3.2.6 lists Potential Contaminated Media for Building 205 and Discharge Channel as Structures and Drainage Systems. This would include any equipment (pumps) and residue in the equipment within the structure and any sediment within the discharge channel. This will be clarified in the Final HRA.

11. **Comment:** **Section 8.3.3.3, Building 211: The floor plan for Building 211 appears to be missing. This building was included in the Phase V Investigation, so a floor plan was probably used during the investigation. Please provide the missing floor plan and indicate where the thorium-232 (Th-232) contamination is located on the floor plan.**

Response: There were no floor plan drawings for Building 211 found during the research for the HRA. The Draft Phase V Report for Building 211 has been submitted for Navy review. The drawings associated with the report do not provide a detailed floor plan with delineation of former uses and therefore was not included in the HRA. A drawing indicating the location of the Th-232 contamination will not be released until the Navy has approved the report. A more detailed written description of Building 211 will be provided in the Final HRA to compensate for the lack of floor plan.

12. **Comment:** **Section 8.3.3.5, Building 224, Pages 8-65 and 8-66: It is unclear why the recommendation is only to review the Final Status Survey Report when the contamination potential is likely and Cesium-137 (Cs-137) was found to slightly exceed release criteria in one sample. Please explain why the recommended action is appropriate.**

Response: The Contamination Potential for Building 224 is listed as "likely" because slight contamination was discovered during the Phase V Investigation and the Final Status Survey Report has been submitted to Navy, but has not yet been reviewed and approved. Until the Final Status Survey is reviewed and approved, the potential is still maintained as likely as a conservative measure in the event the survey is incomplete or incorrect.

13. **Comment:** **<u>Section 8.3.4.14, Gun Mole Pier, Pages 8-122 and 8-123</u>: It is unclear why the recommendation is, "Review Characterization Report," when additional surveys are pending. Please revise the recommended action to include the additional surveys.**

Response: The recommendations in the Draft Final HRA were written as the next step in the process. These will be expanded in the Final HRA to include all remaining actions in the process.

14. **Comment:** **<u>Section 8.3.5.14, Former Building 701 Site, Page 8-169 and Table 3-3, Current and Former Facilities at HPS by Building Number</u>: The text on page 8-169 indicates that the NRDL used Building 701 from 1947 through at least 1954, but Table 3-3 indicates that the building was only used for 120 days. Apparently NRDL requested use of the building for 120 days but did not return it to the shipyard. Please revise Table 3-3 to be consistent with Section 8.3.5.14.**

Response: Table 3-3 will be corrected in the Final HRA.

15. **Comment:** **<u>Section 8.3.5.16, Building 704 Area Animal Pens, Section 8.3.5.17 Building 707 and Kennels, Pages 8-175 through 8-179, and Section 8.3.5.20 Building 707 Triangle Area, Pages 8-184 through 8-186</u>: The interview with Frank Taforo indicates that dog waste was washed down the drains at Building 815, so it is likely that this practice was also followed at these sites, but there is no discussion of whether there were septic systems or if this waste was discharged into the sanitary sewer system. Also, there was a significant amount of contaminated gravel in the Dog Pen Areas at the Laboratory for Energy Related Health Research Site, where research in irradiating beagles and other animals was conducted, so it is possible that any gravel in these areas may also be contaminated. Please clarify whether the investigations that have been completed included gravel, drain lines, septic systems and the sanitary sewer or indicate that these areas will be investigated in follow-on surveys.**

Response: The Building 704 Area Animal Pens were identified on a 1949 map. These small pens seemed to be a temporary location for the animals until a more permanent location was available as they were only identified on one map. No records of historical surveys of this site were available. The scoping survey recommended for this site will cover all of the areas identified on the map.

As indicated in the Draft Final HRA in Sections 8.3.5.17 and 8.3.5.20, the Contamination Potential for Building 707 and Kennels as well as the Building 707 Triangle Area is "Known – Continued Access." Additionally, these sections indicated Potential Contaminated Media as "Moderate" for drainage systems at Building 707 and Kennels and "High" at the Building 707 Triangle Area. Both of these areas are recommended for additional investigation and remediation. These actions would include any remaining gravel, drain lines, septic systems, and sanitary sewer systems associated with the sites.

16. **Comment:** **Section 8.3.5.28, IR-01/21, Industrial Landfill Area, Pages 8-203 and 8-204: The text indicates that there are areas with elevated levels of radiation, but much of the landfill has been capped. It is unclear if the fact that part of the landfill has been capped was taken into account in the recommendation to excavate hot spots or if it is intended that remediation will be conducted in areas that are already capped. Please provide a brief description of the areas where elevated radiation levels were found and compare these locations with the location of the landfill cap. If elevated radiation levels were detected in the capped area, please clarify if these areas will be remediated, and if so, indicate whether the cap will be repaired and by whom. If the cap will be breeched, it may make sense to coordinate this effort with the Navy Remedial Project Managers (RPMs), so that installation of a landfill gas vent system can be considered. Finally, it is unclear whether radon may be an issue in landfill gas and whether landfill gas has been tested for radon. Please discuss whether landfill gas has been tested for radon, and if not, indicate how this data gap will be addressed.**

Response: An extensive characterization survey of the IR-01/21 Industrial Landfill Area was conducted during the Phase V Investigation. The Navy has not yet reviewed the final report of the surveys. The results of the surveys and the location of the elevated radiation levels will not be released until the Navy has reviewed and approved the characterization survey report. The specifics of any future remedial activity are not considered to be within the scope of the HRA.

17. **Comment:** **Section 8.3.5.31, IR-04, Former Scrap Yard, Pages 8-211 and 8-212: The text indicates that elevated levels of Cs-137 and radium-226 (Ra-226) were found, but the recommendation is only for further characterization surveys. It is unclear why remediation was not recommended. Please clarify why remediation was not recommended and consider revising the recommendation.**

Response: The recommendation in Section 8.3.5.31 listed the next appropriate step in the radiological free release process. This will be expanded in the Final HRA to incorporate the whole process.

18. **Comment:** **Section 8.3.5.32, Former Salvage Yard, Page 8-213: The Former Salvage Yard is also part of IR-12. Please include IR-12 in the designation of this site.**

Response: Section 8.3.5.32 will be changed to IR-12 in the Final HRA.

19. **Comment:** **Section 8.3.7.1, Underwater Areas, Page 8-225 and Section 8.3.7.2, All Ship's Berths, Page 8-226: It is unclear why sediment is not included as a potentially contaminated media, given the interview with William Gravatt indicates that it was impossible to catch and containerize all of the Operation Crossroads Sandblast grit. Please include sediment in the list of potentially contaminated media.**

Response: Section 8.3.7.1, Underwater Areas, indicates subsurface soil as an area of potential contamination and migration. Section 8.3.7.2, All Ship's Berths, includes surface soil and subsurface soil as an area of potential contamination and migration. These would include the areas where OPERATION CROSSROADS decontamination residue would be found.

20. **Comment:** **Section 8.3.9.1, Building 815, Pages 8-232 through 8-234: The interview with Frank Taforo indicates that contaminated dog waste was washed down the drains at Building 815. The liquid effluent tanks and drainage systems need to be evaluated. Please include the investigation of the liquid effluent tanks and drainage systems in the recommended actions.**

Response: Section 8.3.9.1, Building 815, includes drainage systems as areas of potential contaminated media and migration pathways. This would include the building drainage system and the liquid effluent tanks as part of the recommended scoping survey.

21. **Comment:** **Table 8-2, Building/Area Assessment and Classification: Sediment is missing from the list of potentially contaminated media. See specific comment 7 for a discussion of issues. Please add sediment as a potentially contaminated media and indicate select sites with dry docks, ship berths, storm sewers, and below-ground drain line issues as locations with potentially contaminated sediment.**

Response: The inclusion of sediment as a category is not necessary because sediment would be contained in equipment within a structure, drainage systems, or in underwater areas and would be covered by the existing categories of Potential Contaminated Media and Migration Pathway and will be investigated as part of the radiological free release process.

RESPONSES TO COMMENTS ON THE HUNTERS POINT SHIPYARD, SAN FRANCISCO CALIFORNIA "DRAFT FINAL HISTORICAL RADIOLOGICAL ASSESSMENT, VOLUME II, USE OF GENERAL RADIOACTIVE MATERIALS, 1939-2003" SUBMITTED BY THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

This document presents the Navy's responses to comments from the California Department of Toxic Substances Control (DTSC), on the "Draft Final Historical Radiological Assessment [HRA], Volume II, Use of General Radioactive Materials 1939-2002, Hunters Point Shipyard [HPS], San Francisco, California," dated February 2004. The comments were included in a letter to Naval Facilities Engineering Command, Southwest Division (SWDIV), dated 4 June 2004, from DTSC.

The letter preceded the following comments with the statement "Although the HRA was submitted to DTSC as a draft final, DTSC can not approve of the document until several issues are resolved. These include:"

1. **Comment:** **"Updating information on the history and status of Building 322."**

   Response: The Final HRA will include pertinent information for both the former Building 322 site in Parcel D and the Building 322 in Parcel A.

2. **Comment:** **"Resolution of issue identified in US EPA comments of the draft final HRA dated April 27, 2004."**

   Response: The Navy acknowledges the comment and will address the comments provided by the U.S. Environmental Protection Agency separately.

3. **Comment:** **"Resolution of issues identified in the Arc Ecology comments on the draft final HRA dated April 27, 2004."**

   Response: The Navy acknowledges the comment and will address the comments provided by Arc Ecology separately.

RESPONSES TO COMMENTS ON THE HUNTERS POINT SHIPYARD, SAN FRANICSCO, CALIFORNIA "DRAFT FINAL HISTORICAL RADIOLOGICAL ASSESSMENT, VOLUME II, USE OF GENERAL RADIOACTIVE MATERIALS, 1939-2003" SUBMITTED BY THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

This document presents the Navy's responses to comments from California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), on the "Draft Final Historical Radiological Assessment [HRA], Volume II, Use of General Radioactive Materials 1939-2002, Hunters Point Shipyard [HPS], San Francisco, California," dated February 2004. The comments were included in an undated letter, File No. 2169.6032(JDP), PCA No. 16525 to Naval Facilities Engineering Command, Southwest Division (SWDIV), from Mr. James D. Ponton.

1. **Comment:** **"Section 8.3.6.1, page 8-218 – Section 8.3.6.1 (Storm Drain Lines) states that the storm drain system that was originally designed and built at HSP (circa 1940's), was a combined sanitary and storm drain system with 40 separate discharge outfalls into the Bay. Figure 8.3.6.1 (Storm Drain System) does not show the locations of the discharge outfalls referred to in the text. Furthermore, the text states that the potential contamination media and potential migration pathways for surface soil, surface water and groundwater is "none." Water Board staff requests that Figure 8.3.6.1 be edited to show the locations of the historic outfalls and that the appropriate sections of text be edited, as necessary, to describe the contamination potential to surface water and sediments that may be associated with these historic outfalls."**

Response: The original intent of Figure 8.3.6.1 was to include documentation of the discharge outfalls. However, due to the scale of the drawing, the locations of the discharge outfalls are not apparent. The map will be redesigned to show more detail, including locations of discharge outfalls, in the Final HRA.

Additionally, the Navy has reassessed the contamination and migration potentials to surface water, sediments, and groundwater associated with the storm drain lines to include concerns with the discharge outfalls. The revised potential contaminated media and migration pathway assessments are:

- Potential Contaminated Media

Surface Soil:	Low
Subsurface Soil:	Low
Surface Water:	Low
Groundwater:	Low
Air:	None
Structures:	Moderate
Drainage Systems:	High

- Potential Migration Pathways:

Surface Soil:	Low
Subsurface Soil:	Low
Surface Water:	Low
Groundwater:	Low
Air:	None
Structures:	Low
Drainage Systems:	Moderate

RESPONSES TO COMMENTS ON THE
HUNTERS POINT SHIPYARD, SAN FRANICSCO, CALIFORNIA
"DRAFT FINAL HISTORICAL RADIOLOGICAL ASSESSMENT, VOLUME II,
USE OF GENERAL RADIOACTIVE MATERIALS, 1939-2003"
SUBMITTED BY THE
CITY AND COUNTY OF SAN FRANCISCO, DEPARTMENT OF PUBLIC HEALTH

This document presents the Navy's responses to comments from Ms. Amy D. Brownell, Site Mitigation Engineer, City and County of San Francisco, Department of Public Health, on the "Draft Final Historical Radiological Assessment [HRA], Volume II, Use of General Radioactive Materials 1939-2002, Hunters Point Shipyard [HPS], San Francisco, California," dated February 2004. The comments were included in a letter dated 21 April 2004 to Naval Facilities Engineering Command, Southwest Division (SWDIV).

1. **Comment:** **"Section 9.3, Overall Conclusions, bullet two, mentions Final Status Surveys at 26 impacted sites where free release is being recommended. The results from those surveys are under review by the Navy and Regulatory Agencies and have not been released to the public. This bullet is one of eight bullets used to support the overall conclusion that "To date, no evidence has been identified that would indicate that shipyard tenants, the surrounding community, and the environment are at risk from previous radiological activities at HPS."**

"By mentioning those Final Status Surveys of the 26 sites, it appears that the results of those Surveys are part of the evidence for your overall conclusion. But since the public does not have access to those Surveys, it makes it difficult for them to know whether those Surveys are important to the overall conclusion or whether you would reach the Overall Conclusion without those Surveys. In the final report, could you clarify whether those Surveys are important to the Overall Conclusion or whether there is enough evidence in the report and in the Historical Surveys (Appendix D) that allow you to reach the same overall conclusion?"

Response: The Overall Conclusions in Section 9.0 are based on the entire contents of the HRA, including reference documents. This includes the initial results of the Phase V Investigations as summarized in Table 6-6 but not the Final Status Survey Reports because the Navy has not yet reviewed those reports. As stated in the second bullet of Section 9.3, "These sites are recommended for free release pending review of the Final Status Survey Report by the Navy and appropriate regulatory agencies."

The results of the Phase V Investigations as detailed in Table 6-6 are important to the Overall Conclusions because they provide the most recent information for some of the impacted sites. However, it is likely that the same conclusions would have been presented based on the extensive history of studies and surveys that preceded Phase V activities. These

studies, surveys, and conclusions are presented in Section 6.0 and summarized for each impacted site in Section 8.0.

The last statement in Section 9.3, "To date, no evidence has been identified that would indicate that shipyard tenants, the surrounding community, and the environment are at risk from previous radiological activities at HPS" has been questioned by several reviewers. As such, the last paragraph will be revised to include the following statement: "The review of previous radiological activities, cleanup actions, and release surveys has not identified any imminent threat or substantial risk to local residents, tenants, or the environment of HPS."

2. **Comment:** **We have learned recently from the Navy that Building 322 was moved in the 1950's from Parcel D to Parcel A. Given the new information, we assume that the Navy will revise the HRA sections that mention Building 322 and add Building 322 to the list of Parcel A impacted buildings. We also look forward to working with the Navy to resolve the impact this new information will have on the transfer of Parcel A and determining the best path forward in expediting the clearance of Building 322.**

Response: The Final HRA will include Building 322 as an impacted site in Parcel A and provide information on the radiological clearance of the site.

3. **Comment:** **Section 8 makes many references to the various types of surveys that have been performed and will be performed including scoping surveys, characterization surveys, Final Status Surveys, etc. Sometimes it also mentions a Class of survey, such as Class I scoping survey. Is it significant when a Class of survey is mentioned? Should the Class of survey be mentioned in all instances or is it appropriate, as written, that only some of the surveys also designate a class of survey?**

Response: The Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) established the survey class categories, which are used to define the degree of survey effort with Class 1 surveys being the most comprehensive. The application of the classes to a survey effort is based on the probability for contamination as described in Section 7.5 of the HRA.

The recommendations for each of the impacted sites in Section 8.0 have been reviewed and found to be inconsistent. Each recommendation will be reviewed and the survey classification added as appropriate in the Final HRA.

4. **Comment:** **Section 8.3.1.3 – Building 819 - The section mentions that contamination was identified in sanitary sewer lines on Cochrane Street. However, Figure 8.3.1.3 is too small to show Cochrane Street. Can you redraw the map so that Cochrane Street is shown or direct the reader to Figure 4-1 that shows Building 819 in relation to Cochrane Street?**

Response: The Final HRA will include a revised Figure 8.3.1.3 that includes Cochrane Street.

5. **Comment:** **Section 8.3.5.13 – Former Building 529 site - Recommended actions include "Review Phase V Class 3 Survey Report". There is also mention of an "Additional Class I scoping survey..." Please clarify in the text and table that both a Phase V Report Review and a further Class I Scoping Survey will be completed.**

Response: The Final HRA will clarify that the Phase V Class 3 Survey Report will be reviewed and a Class 1 survey will be completed.

RESPONSES TO COMMENTS ON THE
HUNTERS POINT SHIPYARD, SAN FRANCISCO CALIFORNIA
"DRAFT HISTORICAL RADIOLOGICAL ASSESSMENT, VOLUME II,
USE OF GENERAL RADIOACTIVE MATERIALS, 1939-2003"
SUBMITTED BY THE
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO, CORPS OF ENGINEERS

This document presents the Navy's responses to comments from the U.S. Army Engineer District, Sacramento, Corps of Engineers, on the "Draft Final Historical Radiological Assessment [HRA], Volume II, Use of General Radioactive Materials 1939-2002, Hunters Point Shipyard [HPS], San Francisco, California," dated February 2004. The comments were included in a letter to Naval Facilities Engineering Command, Southwest Division (SWDIV), dated 15 March 2004, from Mr. Jerry Vincent, Formerly Used Defense Sites (FUDS) Program Manager.

1. ***Comment:*** **General Overview: The draft HRA provided more detail of certain buildings in the Draft version of the Hunters Point Shipyard HRA (as an example, the discussion in the draft HRA on IWC, Bldg 418 stated that approximately one third of the facility was used in support of NRDL and in the draft final this information is not provided).**

Response: Because it is such a large document with so many impacted sites, the Navy chose to eliminate the detail in the Draft Final HRA document and provide more reference documentation with the specific details. It is noted that the example you cited is not spelled out in the references for ICW-418. This will be corrected in the Final HRA.

Comment 2 **Specific Review: ICW (Bldg 418): The building was cleared by AEC in 1970. No evidence has been provided indicating the material stored in the facility was radioactive, where the storage area was, or if there was breakage/spills in the storage area. It seems that little research effort was used and a simple decision reached concluding that instead of a records search, do a survey of the entire building assuming that the radionuclides of concern are Cs-137, Ra-226, and Sr-90. These radionuclides are not completely indicative of the radionuclides that may have been used, and thus stored, in a NRDL facility. Given the fact that the facility was used as a storage facility and the area was apparently surveyed and released by the AEC, there is a very low likelihood the facility contains residual radioactive contamination.**

Response: An exhaustive review at multiple archive locations was done to obtain information about historical radiological operations at HPS. Unfortunately, very little specific information was found regarding Naval Radiological Defense Laboratory (NRDL) operations at ICW 418. NRDL was originally given 35,442 square feet of space in Warehouse Building 418, Islais Creek Annex, in 1951. This information is contained in HRA

Reference 250. The fact that Atomic Energy Commission (AEC) did a clearance survey in 1970 indicates that unsealed sources of AEC-licensed radioactive material was either used or stored in the building. While the AEC surveys were probably considered very comprehensive in 1970, the Navy has found that none of the HPS facilities released by the AEC in 1970 meet today's free release standards. Additionally, the Navy has historically found radioactive contamination in all HPS facilities formerly released by the AEC. The radionuclides of concern, radium-226 (Ra-226), cesium-137 (Cs-137), and strontium-90 (Sr-90), are the radionuclides that we have most commonly found at HPS in former NRDL sites. Ra-226 was used in experiments by NRDL and is contained in radioluminescent dials and gauges. Cs-137 and Sr-90 are fission products from nuclear weapons tests. NRDL participated in all of the tests and brought back large numbers of samples from the test sites and decontaminated ships and equipment used at the tests. During the preparation of the Final HRA, the radionuclides of concern will be compared against NRDL AEC licenses for possible inclusion of additional radionuclides.

3. **Comment:** **Specific Review: Research Facility (Bldg 815): This facility was the main laboratory for NRDL and was decontaminated, surveyed and released by AEC. The building was resurveyed in 1978 by two entities, resurveyed in 1979 and again in 1985. The last survey of the facility is not referenced in the HRA. The survey performed in 1985 was sent to California Department of Health Services (DHS) for review. The conclusion reached by DHS was the facility met the "current criteria" for release for unrestricted use. The "current criteria" used for the review was Reg Guide 1.86 (issued in 1974 and still used today). Given the number of surveys performed on the facility, the decontamination effort perform ed, and the fact that the Navy did not apparently consider the survey or review performed in 1985, the conclusion is that no survey should be required for this facility. It is not clear what conclusion could be drawn from performing a scoping survey for the facility. The only difference between the surveys that were done in 1985 and the surveys that may be performed now is the survey methodology. Specifically, the current accepted methodology uses MARSSIM (issued in 1996), however the DCGL (Derived Concentration Guideline Limit or, simple the release criteria) to be used for the facility would still be based on Reg Guide 1.86. In addition, to call into question the validity of the survey performed on this facility by the Navy for no apparent reason other than the different methodology causes a perception that all surveys performed by the Navy prior to MARSSIM are invalidated and need to be performed using MARSSIM. This does not appear to be a logical resolution to the issue. Based on the information reviewed to date it is recommended that no further action in the form of radiological surveys be performed on this facility and it retain the "release for unrestricted use" status.**

Response: The Navy is working with the California regulatory agencies and the U.S. Environmental Protection Agency (EPA) concerning radiological free release of radiologically impacted sites at HPS and other Naval bases. While the Navy has not had an opportunity to review the 1985 survey of Building 815, Nuclear Regulatory Commission (NRC) Regulatory Guide 1.86 is not the only criterion used for release of building surfaces today. Additionally, while Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) is an integral part of all release surveys, it is not the only guidance applied by the Navy and the regulatory agencies.

The scope of the radiological surveys being done at HPS today ensures that any and all potential radiological contaminants are addressed in all areas, including building and equipment surfaces, ventilation systems, drainage systems and tanks, and outside areas. Historically, the Navy has consistently found contamination in buildings where previous decontaminations have been conducted. This is particularly true for the decontamination efforts that were conducted in 1978. An example of this is Building 364, which was decontaminated and released to the same standards as Building 815 in 1978.

Therefore, even though it is true that the Navy has not reviewed the 1985 survey, the recommendation for a scoping survey will remain as the recommended action in the Final HRA.

4. **Comment:** **Specific Review: Cyclotron Facility (Bldg 820): This facility housed a cyclotron, which was never used to produce an external beam. Past experience with processes similar to this indicate that long-term activation of building material is highly likely, but only if the equipment was used in a manner which exposed the building material to neutrons or protons (resulting in long-term activation of building materials). Exposure to electrons or other nuclei would not result in long-term activation of building materials. Further, in the draft version of the HRA it was stated that the facility was never used to produce an external beam and therefore no further action was necessary. In the draft final version of the HRA it was stated that the building was never used, however in this version a scoping survey was recommended. No reasoning was given for this reverse in direction or for the recommendation of performing a scoping survey. This recommendation is not consistent with past Navy practices of not performing surveys on facilities that were never used for a radiological purpose or exposed to radioactive contamination or activation. Based on the information reviewed to date and the Navy past practices it is recommended that no further action in the form of radiological surveys be performed on this facility.**

Response: NRDL was an organization with access to all types of radioactive materials and machines that produce radiation. While it is true that the Cyclotron was never fully operational, it was constructed and tested within Building 820. The types of targets used in the testing are unknown.

The Draft HRA had many inaccuracies and inconsistencies and therefore the Navy issued the significantly revised Draft Final HRA.

The Navy takes a very conservative approach to radiological surveys, particularly when they involve the transfer of Navy property for unrestricted use. This approach allows the Navy to eliminate any future liability after the property is transferred. This is particularly true at HPS, where many of NRDL's records were destroyed and specific practices cannot be determined. Therefore, the recommendation for a scoping survey will remain as the recommended action in the Final HRA.

5. **Comment:** **Specific Review: Kennels (Bldg 830): This facility was used for breeding of test animals by NRDL. No evidence has been presented in either the draft HRA or the draft final HRA that suggests the facility was even used for storage, use or analysis of radioactive material or animal carcasses. Further, in the draft version of the HRA it was concluded that no further action be taken with this site. In the draft final version of the HRA the conclusion is that a scoping survey is required. No new evidence was presented in the draft final version of the HRA to support the change in conclusions. There is no expectation that this facility would be radioactively contaminated through its use and no evidence exists that radioactive materials would have been stored or used in this facility. The only consideration in the conclusion is the facility was managed by NRDL and thus potentially radioactively contaminated by association. In addition, the draft final HRA recommendation to perform a scoping survey is not consistent with Navy practices of not performing surveys on facilities that were never used for a radiological purpose or exposed to radioactive contamination or activation. Based on the information reviewed to date, the fact that the facility was not licensed and the Navy's initial recommendation, it is recommended that no further action in the form of radiological surveys be performed on this facility.**

Response: NRDL was an organization with access to all types of radioactive materials and machines that produce radiation. NRDL used these materials and machines for experimentation with all types of animals. While it is recognized that Building 830 was not occupied until 1967, the possibility exists that NRDL used the building to house animals dosed with radioactive materials. This is evident by the fact that there was a "dirty" entrance to the building as well as a "clean to dirty" traffic flow.

Additionally, there were animal quarantine and holding rooms as well as a microbiology and multi-purpose laboratory for check of animals.

The Draft HRA had many inaccuracies and inconsistencies and therefore the Navy issued a significantly revised Draft Final HRA.

The Navy takes a very conservative approach to radiological surveys, particularly when they involve the transfer of Navy property for unrestricted use. This approach allows the Navy to eliminate any future liability after the property is transferred. This is particularly true at HPS, where extensive experimentation using radioactive materials and animals occurred, many of NRDL's records were destroyed, and specific practices cannot be determined. Therefore, the recommendation for a scoping survey will remain as the recommended action in the Final HRA.

6. **Comment:** **Specific Review: Animal Research Facility (Bldg 831): This facility was used for breeding of test animals by NRDL. No evidence has been presented in either the draft HRA or the draft final HRA that suggests the facility was ever used for storage, use or analysis of radioactive material or animal carcasses. Further, in the draft version of the HRA it was concluded that no further action be taken with this site. In the draft final version of the HRA the conclusion is that a scoping survey is required. No new evidence was presented in the draft final version of the HRA to support the change in conclusions. There is no expectation that this facility would be radioactively contaminated through its use and no evidence exists that radioactive materials would have been stored or used in this facility. The only consideration in the conclusion is the facility was managed by NRDL and thus potentially radioactively contaminated by association. In addition, the draft final HRA recommendation to perform a scoping survey is not consistent with the Navy practices of not performing surveys on facilities that were never used for a radiological purpose or exposed to radioactive contamination or activation. Based on the information reviewed to date, the fact that the facility was not licensed, and the Navy's initial recommendation, it is recommended that no further action in the form of radiological surveys be performed on this facility.**

Response: NRDL was an organization with access to all types of radioactive materials and machines that produce radiation. Building 831 is listed as the NRDL Animal Research Facility; however, very little information is available about the specific types of research that were conducted in the building. With its close proximity to Building 815 and the many animal experiments that were conducted using radioactive materials, it is reasonable to assume that there is a possibility of contamination remaining in the building.

The Draft HRA had many inaccuracies and inconsistencies and therefore the Navy issued the significantly revised Draft Final HRA.

The Navy takes a very conservative approach to radiological surveys, particularly when they involve the transfer of Navy property for unrestricted use. This approach allows the Navy to eliminate any future liability after the property is transferred. This is particularly true at HPS, where extensive experimentation using radioactive materials and animals occurred, many of NRDL's records were destroyed, and specific practices cannot be determined. Therefore, the recommendation for a scoping survey will remain as the recommended action in the Final HRA.

RESPONSES TO COMMENTS ON THE HUNTERS POINT SHIPYARD, SAN FRANCISCO CALIFORNIA "DRAFT FINAL HISTORICAL RADIOLOGICAL ASSESSMENT, VOLUME II, USE OF GENERAL RADIOACTIVE MATERIALS, 1939-2002" SUBMITTED BY ARC ECOLOGY

This document presents the Navy's responses to comments on the "Draft Final Historical Radiological Assessment [HRA], Volume II, Use of General Radioactive Materials 1939-2002, Hunters Point Shipyard [HPS], San Francisco, California," dated February 2004. The comments were provided in letters from Lea Loizos, Staff Scientists, Arc Ecology, San Francisco, California, dated 16 March 2004 and 27 April 2004, to Naval Facilities Engineering Command, Southwest Division (SWDIV). The 16 March 2004 letter included a letter from Amanda Schneider, Radioactive Waste Management Associates, New York, New York, to Arc Ecology with comments on the HRA. The 27 April 2004 letter included a report detailing comments on the HRA entitled "Independent Assessment of the Hunters Point Historical Radiological Assessment" prepared by Amanda Schneider and Marvin Resnikoff, Ph.D, of Radioactive Waste Management Associates, New York, New York, on behalf of Arc Ecology.

The following provides a response to comments in the Arc Ecology letter dated 16 March 2004. Comments from the attached letter from Radioactive Waste Management Associates are not included for response as they are reiterated in the Arc Ecology letter.

1. **Comment:** **In Section 8, the Findings and Recommendations, the sites that have recently undergone some type of survey or remediation reference the New World Technologies' 2002 Phase V Investigations. The results of these investigations are summarized for each site by a phrase such as "Survey results meet the release criteria", or "Survey completed." However the Phase V Investigations are not included in the reference section nor are they provided in the appendices. Section 2-2, page 2-2 mentions that "documentation of further investigation and/or remediation of impacted sites will be documented in separate report." How we are to examine the conclusions of the HRA (including: 'To date no evidence has been identified that would indicate that shipyard tenants, the surrounding community, and the environment are at risk from previous radiological activities at HPS') if we are not provided with the most recent evidence for the majority of sites?**

Response: The purpose of the HRA is to identify radiologically impacted sites, provide the history of the sites, and make recommendations for future radiological actions at the sites. The document is considered a "snapshot in time" of the information available at the time the HRA is prepared. The conclusions made in Section 9.0 of the Draft Final HRA take into consideration all of the information that was provided in the document. The conclusions do not take into consideration the content of the Phase V Radiological Investigation Reports because these reports are still being reviewed by the Navy and have not been published for regulatory agency

and public comment. The preliminary Phase V Investigation information taken into consideration is detailed in Table 6-6.

The following provides responses to comments from the Arc Ecology letter of 27 April 2004. Comments in the Radioactive Waste Management Associates report attached to the Arc Ecology letter are addressed in the following section.

1. **Comment:** **For sixty of the ninety impacted sites, the HRA recommends remediation and/or further study. Arc Ecology supports these recommendations for further study to fully characterize the extent and nature of possible radiological contamination and the need for a cleanup to the highest standards.**

   Response: The Navy appreciates the support expressed in the comment.

2. **Comment:** **It is not possible for Arc Ecology to effectively assess the all of the Navy's recommendations without access to all Phase V Radiological Investigations conducted by New World Technologies in 2002 data and reports, on which many of the Navy's recommendations are made. When will the Navy make these reports available to the public for review? How will the Navy incorporate the regulatory and public comments on those reports into the recommendations made by the HRA?**

   Response: The HRA is considered a "snapshot in time" of the historical information available at the time the HRA is prepared. The HRA does not take into consideration the content of the Phase V Radiological Investigation reports because these reports have not yet been reviewed by the Navy or published for regulatory and public comment. The preparation of the HRA only considered the preliminary information on the Phase V Investigations as presented in Table 6-6.

   The Navy's Radiological Affairs Support Office (RASO) is still reviewing the draft Phase V Investigation Reports. These reports contain thousands of pages of data that must be reviewed. The reports will be issued to regulatory agencies and the public when RASO has approved the final reports.

   As stated above, the HRA is considered a snapshot in time. Additionally, the HRA is considered a tool to be used in review of the Phase V Investigation Reports and upcoming actions at the site. Regulatory agency and public comments on the Phase V Reports will not be incorporated into the HRA but will be addressed, if necessary, for each site report.

3. **Comment:** **The Phase V reports for Parcel B sites showed that the studies used some questionable practices. These should be addressed and should not be repeated in future studies.**

   a. "Background" values should be measured at an off-site location where there is a question of whether an on-site location might be contaminated.

   b. Instruments should be well-calibrated so that there is no reason to suspect "false positives." Standard QA/QC methods should exist to ensure accurate and repeatable data measurements, and these QA/QC procedures should be presented clearly. Where field practice deviates from these practices, the actual field methods should be identified and justified.

   c. Study results should be presented in a clear format so that the reader can identify which testing results correspond to which location.

   d. Samples should be tested for Sr-90 where it is a contaminant of concern.

Response: It is assumed that your comment is applicable to the Phase V survey reports attached to the Draft HRA submitted in 2002. Those reports were not reviewed or approved by the Navy or the regulatory agencies, should not have been issued, or have since been revised significantly to meet the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) standards. Responses to comments 3.a through 3.d provide general information about radiological work practices at HPS.

a. Background locations are selected based on MARSSIM guidance, which includes factors such as similar construction (both age and materials), similar biological and geological locales, similar use (in this case shipyard heavy industrial), and reasonable assurance that the background area has not been impacted by radiological operations. All comparative background information is included for review in the radiological release reports.

b. Survey instruments are calibrated by an independent third party facility certified and licensed to perform that function in accordance with industry standards. Those calibration sheets are presented in the survey report. "False positives," which indicate the presence of contamination when none is actually there, cannot be eliminated but can be limited. Quality assurance and quality control practices require that calibration be verified and recorded each time an instrument is used for a survey to ensure that the instrument is functioning properly. These practices are spelled out in site work plans that undergo review and approval by RASO prior to implementation in the field. The protocol of the Phase V Surveys required investigation of any elevated reading whether or not that reading is a false positive.

c. Every attempt is made to present results that clearly demonstrate the findings of the survey. That is one of the reasons the reports were revised.

d. Sr-90 analysis is routinely performed when it is identified as a radionuclide of concern.

4. **Comment:** **The determinations of the "Contamination Potential," "Contaminated Media Assessment," and "Potential Migration Pathways" are inappropriate or unsupported for many impacted sites.**

a. All sites that have historical evidence of radioactivity impact should be considered to have a high potential for contamination if no surveys have been done.

b. Sites that the Navy admits are contaminated should not be rated as having a low potential for contamination.

c. Specific sites identified in this report for which these determinations should be revised include buildings 203, 224, 813, 819, Drydocks 2, 3, 4, and 6, IR-07, IR-18, and all of Parcels E and F.

Response: The assessments of contamination potential, potential contaminated media, and potential migration pathways were made based on available information; however, some errors have been noted and they are being revised for the Final HRA.

a. The determination of contamination potential is based on many factors, including type of radioactive material and operations for which it was used, historic controls of the material, previous remediations or surveys of the site, and physical properties of the site. Section 7.3.1 provides the categories for contamination potential and criteria for each category.

b. Once a site is categorized as having a contamination potential, then each media type is assessed for possible contamination and rated as high, moderate, or low as detailed in Sections 7.3.2 and 7.3.3. Factors, including type of radioactive material and operations for which it was used, historic controls of the material, previous remediations or surveys, and physical properties of the site, are used to assess each type of media.

c. As stated above some errors have been noted in the site assessments and all categories are being reviewed. Your comments will be considered in these reviews.

5. **Comment:** **The radiological assessments described and/or referenced in the HRA do not support the conclusion that "To date, no evidence has been identified that would indicate that shipyard tenants, the surrounding community, and the environment are at risk from previous radiological activities at HPS." (Section 9.3, Page 9-3) Arc Ecology**

disagrees with this statement, as better characterization of many areas is still required, particularly in Parcel F. Stating that there is no risk would imply that there is no need for remediation, which even the Navy acknowledges is not the case. While we appreciate that the remaining risk is likely not to be imminent or substantial, it is premature at this stage to state that there is no risk to human health and the environment.

a. **There is reason to "expect" that contamination has migrated or will migrate within or off of Navy property. The determination that "to date no evidence has been identified that would indicate that shipyard tenants, the surrounding community, and the environment are at risk from previous radiological activities at HPS," is based on a lack of surveys, not concrete data showing low or no contamination.**

b. **The MARSSIM guidelines, on which the Phase V reports were based, only address building surfaces and surface soil. A different type of research is necessary to evaluate sub-surface contamination that could pose a threat in the future to groundwater or to the Bay. The Navy should make clear that existing or potential contamination of groundwater and of the Bay has not been fully investigated, and should be sure to address these issues in future research. At a minimum, the Navy should begin systematic subsurface soil sampling and sampling of local marine life as soon and as comprehensibly as possible.**

Response: The final conclusion of Section 9.3 has been the subject of many comments and has been modified for the Final HRA. The new statement is "The review of previous radiological activities, cleanup actions, and release surveys has not identified any imminent threat or substantial risk to tenants or the environment of HPS, or the local community."

a. The HPS property consists of approximately 936 acres, about half of which is below Bay waters. The Navy fully acknowledges that contamination will migrate within that property. However, the potential for contamination to migrate beyond that property at levels considered hazardous is remote.

b. The potential for subsurface contamination and migration is addressed for each impacted site in the HRA. While MARSSIM is a very useful tool, the Navy and regulatory agencies recognize its limitations. Each site investigation will use protocols appropriate for contamination and migration potentials of the site. This will include sampling of subsurface soils, groundwater, vegetation, and biota as appropriate. These investigations will include Parcel F (underwater areas) and ship's berths and HPS shoreline. It should be noted, however, that it is not under the purview of the HRA to determine when the investigations will commence.

6. **Comment:** **The characterization of Parcel E is not complete enough to perform a risk assessment. The risk assessment that was conducted only looked at Ra-226 as a contaminant of concern, even though the HRA acknowledges that Cs-137 and Sr-90 may also be present on Parcel E. Furthermore, the groundwater pathway was excluded from the RESRAD modeling. A new human health risk assessment will need to be conducted once the area is more fully characterized.**

Response: The purpose of an HRA is to provide the radiological history of the site, identify radiologically impacted areas, and recommend future actions. The Navy recognizes the need for further radiological investigation of Parcel E as noted by the HRA's recommendation for additional investigation for 29 of the 33 impacted sites on Parcel E. However, addressing the adequacy of the Parcel E risk assessment or recommending a new risk assessment is beyond the scope of the HRA.

7. **Comment:** **Arc Ecology disagrees with the HRA's recommendation that the only action necessary for Drydock 6 is that the Phase V report be reviewed. We believe the sediment contamination needs to be further characterized and remediated. Swipe testing must be done on the site. In addition, studies of potential contaminant migration should be done, assessing whether contamination could pose risks for the ecology of the Bay.**

Response: It is assumed that the comment results from review of the Phase V Drydock 6 report that was included in the Draft HRA. As stated above, this report was not approved by the Navy and should not have been included with the Draft HRA. The Phase V Investigation of Drydock 6 included sediment sampling within the drydock and swipe testing for removable contamination, where appropriate. The results of these efforts are under Navy review. The HRA recommends further investigation of Parcel F (underwater areas). This would include areas outside of Drydock 6.

8. **Comment:** **Arc Ecology is particularly concerned about the contamination potential in Parcel F from Operation Crossroads activities, outfall discharge from the storm drain and sanitary system, groundwater migration, surface runoff, and general atmospheric fallout from activities conducted at HPS. We strongly believe that the situation at Hunters Point Shipyard and vicinity requires an in-depth ecological risk assessment to assess the effects of these activities.**

Response: The Navy agrees that there is contamination potential at HPS from radiological operations at the site. The HRA recommends investigations for Parcel F (underwater areas), storm drains (including outfalls), and

sanitary sewers with the exception of Parcel A. However, recommending an in-depth ecological risk assessment is beyond the scope of the HRA.

9. **Comment:** **The report does not clearly describe the process that will be followed for addressing the recommendations made in the HRA. Please provide an explanation of the steps to be taken from here to respond to the recommendations made by the HRA, as well as comments/recommendations received on the HRA.**

Response: The HRA is intended as a tool to be used in addressing radiological investigations at HPS. In response to other comments, expanded recommended actions will be provided in the Final HRA. How these recommendations will be implemented is beyond the scope of the HRA. However, the Navy (SWDIV and RASO) is working with site contractors to prioritize and implement the recommendations of the HRA and proceed to free release radiologically impacted sites. Once complete, these actions will be documented in reports for review by the regulatory agencies and the public.

10. **Comment:** **Please explain the affect the HRA recommendations will have on the Parcel B ROD amendment. If the recommended surveys are not completed and reviewed before the amendment process begins, when and how will the results be handled?**

Response: The HRA recommendations for Parcel B have been prioritized such that the work and regulatory agency review will be completed at the time the Parcel B Finding of Suitability to Transfer is prepared. Radiological surveys and any cleanup work necessary will be accomplished using specific work plans under the Basewide Radiological Removal Action Memorandum. The Parcel B Record of Decision Amendment will memorialize the cleanup levels and cleanup methodologies presented in the Basewide Radiological Removal Action Memorandum, as recommended in the First Five-Year Review of Remedial Actions at Hunters Point Shipyard, dated December 10, 2003.

11. **Comment:** **Table 8-2 is a very useful summary of building/area assessments and classifications. Given that the radionuclides of concern vary with building/area and that potential health risks vary according to radionuclide, it would also be helpful to include this information on Table 8-2. Please revise the table to include the specific radionuclides of concern at each building/area.**

Response: The radionuclides of concern will be added to Table 8-2 in the Final HRA.

12. **Comment:** **On page 6-32, in the third paragraph, please revise the text to indicate that you are referring to Plutonium 239 (Pu-239) as Pu-238, also listed as a radionuclide of concern at the Shipyard, has a different half-life.**

Response: The text will be changed in the Final HRA.

13. **Comment:** **On page 6-40, in the second complete paragraph, the summary of 1969 to 19710 AEC Surveys states that "Several areas were identified as containing residual radioactivity exceeding the above limits, but additional control were put in place prior to AEC acceptance of the release surveys." Only one action is mentioned – the drain in Building 364 was filled with concrete. Please revise the text to specify what additional controls were put in place in order for AEC to release the buildings/areas for unrestricted use.**

Response: The reference document (HRA-1479, page 16) was reviewed. Filling the pipe and hole in the floor with concrete was the only action required. The text will be clarified in the Final HRA.

14. **Comment:** **On page 6-41, Section 6.4.6 discusses the April 1978 LFE Survey of Building 815. In the summary of results, several recommendations are listed. In this section and others, it would make the history section more complete if references were given to point the reader to the follow-up action on recommendations. Without this information, it is often difficult for the reader to know how – or if – the Navy followed through on recommendations relating to the removal or further investigation of radiological contamination.**

Response: Section 6.4.7 indicates that RASO "conducted a radiological survey to validate LFE's survey results for Building 815." Following a review of the relevant sections of this chapter, the LFE survey of Building 815 was the only survey/study that contained recommended actions without implementation.

The following provide responses to comments from the "Independent Assessment of the Hunters Point Historical Radiological Assessment" prepared by Radioactive Waste Management Associates and attached to the Arc Ecology letter of 27 April 2004. As the assessment is in a narrative format, the quoted comments will quote sections of the narrative. Sections previously covered in response to Arc Ecology comments above will not be included.

1. **Comment: 1** **Page 3, Parcel A, paragraph 1: One of these buildings (building 813) had contained a 300 uCi leaking Sr-90 (see Figure 3). Despite the fact that there is no detailed information on the source (how long it was there for, whether or how it was removed, which part of the building it was located in, etc.), the HRA concludes that "spread of contamination from the source would be unlikely". The potential for contamination and contaminant migration is rated "low" for structures and "none" for all other media. As there have never been any radiological investigations of the building, we believe that these assessments are unwarranted and the ratings should be revised to "moderate".**

Response: All available historical information on the leaking source in Building 813 was provided. It is believed to be a radiation survey instrument check source that was held by the Disaster Preparedness Group. These sources are very common in the Navy and private industry. A leaking check source would have minimal potential for spread of contamination. There is no reason to think that the contamination would have spread beyond building surfaces.

2. **Comment:** **Page 3, Parcel A, paragraph 2: A former sewer pump station (building 819) was also previously part of Parcel A. The HRA rates this building as "likely" contaminated, as the Phase V reports found contamination in nearby sewer lines. There are no previous radiological investigations of this building. However, the potential for contamination and contaminant migration is rated "low" for structures and only "moderate" for drainage systems. It is rated "none" for all other media, despite the fact if the sewer system was contaminated the pipes may have leaked contamination into the subsurface soil. According to the HRA, "during storm events, storm water flows would overwhelm Building 819", and outflow would be redirected into the Bay. During these times of increased flow rate, pipes would have been more likely to leak into the soil. The contamination potential should be "low" or "moderate" for subsurface soil and for groundwater.**

Response: The potential contaminated media and migration pathway assessments for Building 819 apply specifically to the building. The piping leading to the building is covered in Section 8.3.6.1, Storm Drain Lines, and Section 8.3.6.2, Sanitary Sewer Lines. All contaminated media and migration pathway assessments are being reviewed during preparation of the Final HRA. Your recommendations will be taken into consideration.

3. **Comment:** **Numerous comments were provided on the Parcel B Phase V Investigation Reports provided with the Draft HRA for Buildings 103, 113, 113A, 130, and 146, and Drydock 6 on pages 3 through 9 of the report. The comments are too lengthy to specifically cite. On Page 8, paragraph 2 the comments conclude with "However, these Phase V surveys have many flaws, and we would not say with 100% certainty that the potential for radioactive contamination at these buildings has been adequately characterized."**

Response: The Draft HRA included Phase V Investigation reports for Parcel B locations that had not been approved by Navy and have been significantly rewritten since that time. The Navy appreciates the extensive work committed to reviewing the reports; however, the comments are not considered pertinent to the Draft Final HRA or the current version of the Phase V Investigation reports.

4. **Comment:** **Page 10, Other Contaminated Sites, paragraph 1: It appears that there is at least one location at IR-07 that has elevated gamma levels, and no follow-up study has ever dealt with this. The overall contamination at this site is rated "unlikely". The recommendation given is "scoping survey of unremediated areas". The text of the HRA does not detail where remediation has occurred at site IR-07 or what is consisted of.**

Response: The overall contamination potential of "unlikely" is based on the results of previous surveys. The Final HRA will include the identification of reference documents that provide details on the location of previous surveys and remediations.

5. **Comment:** **Page 10, Other Contaminated Sites, paragraph 2, regarding IR-18: All we know is that the site is contaminated at least at one location, and that no follow-up study has examined the issue. Since soil could very well be radioactively contaminated, particularly if Operation Crossroads contaminated fuel oil or its residues were dumped at the site, we don't know why the potential for contamination of this site should be low.**

Response: The overall contamination potential of "unlikely" is based on the results of previous surveys. The scoping survey will be designed to investigate all remaining potential sources of contamination.

6. **Comment:** **Page 12, Parcel C, paragraph 1: One of the impacted sites at Parcel C is building 203... There has been no previous radiological investigation at this site. The HRA provides no justification for rating the overall contamination potential as "unlikely" and the media contamination potentials as "low". If fuel oil was processed at this site it could have leaked and contaminated the building.**

Response: Records indicate that contaminated fuel oil was burned at Building 203 during April through August 1947. Since that time, the power plants in Building 203 have burned millions of gallons of fuel oil. The Navy recognizes the possibility of contamination but considers it a remote possibility. Building 203 is included as an impacted site to address conservatively all possibility of residual contamination at HPS.

7. **Comment:** **Page 12, Parcel C, paragraph 2: Building 224, a storage site for Operation Crossroads, was found to have slightly elevated levels of Cs-137 in the Phase V surveys. It was rated as "likely" contaminated. However, the media contamination potentials and the potentials for contaminant migration were listed as "low" for structures and "none" for all other media.**

Response: Building 224 was used for storage of samples from OPERATION CROSSROADS and OPERATION GREENHOUSE. The Phase V Investigation found slightly elevated level of cesium-137 at one location, so the contamination potential was rated as "likely." Based on historical evidence, the only area of potential contamination would be the structure. It is unlikely that storage of samples would impact other areas. The potentials were listed as "low" for structures because the elevated level of cesium-137 was only found in one sample.

8. **Comment:** **Page 12, Parcel C, paragraph 2: Drydock 2 was also rated as "likely" contaminated, yet contaminant migration potentials were rated as "low" or "none" for all media. It is recommended to be reviewed for release despite the fact that it is "likely" contaminated. The same is true for Drydocks 3 and 4.**

Response: Contamination potentials for Drydocks 2, 3, and 4 were listed as "likely" because radium devices were found in the drydocks during the Phase V Investigations. Potential contaminated media identified structures as moderate and drainage systems as low. Potential migration pathways identified structures as low and drainage systems as low. All other categories were none. These recommendations will be reviewed during preparation of the Final HRA.

9. **Comment:** **Page 12, Parcel E, paragraph 1: Also based on Phase V reports, the overall contamination potentials of many sites have been rated "likely", and scoping surveys or characterization surveys are recommended. For some of these sites the migration potentials for certain media are listed as "moderate" or "high", but for other sites on "low" or "none" ratings are given. For most of these sites, the areas of highest concern are the drainage systems. Given this fact, we believe the migration potential should be "moderate" or "high" for all sites. For some sites, the migration potential rankings are probably only accurate for some media and severely underestimated for other media. For example, the Bay Fill area (IR-02) is given migration potential rankings of moderate for surface and subsurface, but of "none" for surface water, despite the fact that it directly abuts the bay.**

Response: All assessments of contamination potential, potential contaminated media and potential migration pathways will be reviewed during preparation of the Final HRA. It is unlikely that this will result in migration potential as moderate or high for all sites as previous surveys and the preliminary Phase V Investigation results have not found this to be true. The Bay Fill Area (IR-02) does not list surface water as a potential contaminated media or migration pathway because, for purposes of the HRA, it does not abut San Francisco Bay. The Parcel E shoreline and Pier 2 lie between IR-02 and the Bay.

10. **Comment:** **Page 12 through 15, Parcel E: At the request of Arc Ecology we reviewed the Parcel E Risk Assessment and its supporting documents, the PRC Phase II and Phase III radiological investigations...The methodology of these studies (Phase II and Phase III) was not adequate to estimate the amount of radioactivity under the soil. This characterization is not complete enough to do a risk assessment. The risk assessment also contains several faults...**

Response: The HRA considered all previous radiological surveys and assessments, including PRC Environmental Management, Inc.'s Phase II and III radiological investigations and the Parcel E risk assessment. However, assessment of the quality or intent of these documents is beyond the scope of the HRA.

10. **Comment:** **Page 15, Ecological Risks, paragraph 1: We have no idea how potentials for contaminant migration were assessed, but since no studies were cited that investigated migration, we do not agree with most of these assessments. In many cases, sites are found to have low potentials for contaminant migration where common sense would lead one to think otherwise, such as contaminated sites abutting the shoreline, or sites with contaminated drainage systems. Even where moderate or high contaminant migration potentials were given, there is no evaluation of what impact this migration might have on surrounding land and water.**

Response: All assessments of contamination potential, potential contaminated media, and potential migration pathways will be reviewed during preparation of the Final HRA. The Navy will consider your comments during this review.

11. **Comment:** **Page 16, paragraph 1: Therefore, while much of the sanitary sewage system now leads to the City of San Francisco sewage system, some of it, and presumably all storm water, still flows into the Bay. Despite this fact, the HRA rates the potentials for surface water contamination of the sewage systems and underwater areas (Parcel F) as "none". The finding in the Phase V study for Dry Dock #6 that**

many bay sediments have high levels of Cs-137 is the only information we know of about the contamination of the bay itself. While there has been some testing of subsurface soil at specific HPS sites, to our knowledge no systematic testing has been done to assess leakage from the sewage systems.

Response: The Navy recognizes that there is potential migration of contamination from storm drains and sanitary sewer lines as well as OPERATION CROSSROADS decontamination operations to the Bay. The intent of the HRA is to recommend investigative actions for all areas abutting the Bay as well as Parcel F (Underwater Areas). This will include storm drain lines and outfalls, sanitary sewer lines, ship's berths, drydock pumps and discharge channels, and shoreline areas. This will be reviewed and clarified as necessary in the Final HRA.

12. **Comment:** **Page 16, paragraph 2: The Final HRA concludes that the contamination potential for underwater sections of parcel F (the bay abutting the entire shipyard) is "likely", due to Operation Crossroads activities and outfall discharge from the storm drain and sanitary system. During Operation Crossroads ship decontamination, contaminated marine growth and scale was removed from ship hulls using sandblasting, while contaminated piping was cleaned with acid solutions. The sandblast grit and decontamination solvents were dumped into the bay. Although the contamination potential is given as "likely", the HRA lists the media contamination potential and migration potential for subsurface soil as "low" and for all other media as "none". Ships' birthing spaces and piers in parcel F have been found to have levels of Cs-137 "slightly exceeding limits" according to the HRA, but contamination potential is given as "unlikely" and assessments of media contamination potential and migration potential are "low" for soils and structures and "none" for all other media.**

Response: The Navy recognizes that there is potential migration of contamination from storm drains and sanitary sewer lines as well as OPERATION CROSSROADS decontamination operations to the Bay. All site assessments will be review during preparation of the Final HRA. The Navy will consider your comments during this review.

13. **Comment:** **Page 16, paragraph 2: Uranium-235 is listed as a radionuclide of concern for underwater areas of Parcel F. This may be because of the servicing of the reactors of nuclear-powered ships which occurred at HPS. The presence of U-235 is an indicator that nuclear reactors or at the nuclear fuel were unloaded. It indicates that nuclear fuel or contaminated coolant water, and therefore highly radioactive fission products, were released to the environment. In 1987 one of the ships ran aground and was taken to HPS for repairs; it had a gash torn in its side and was likely leaking radioactivity. A 1989 study by the U.S.**

EPA of HPS and other Navy sites did not find evidence of radioactive contamination in sediments, water, or marine life in the Bay. Considering this, it is particularly interesting the U-235 is still considered to be a radionuclide of concern, as one would not expect U-235 to be present in the absence of Co-60.

Response: The HPS HRA is a two-volume set. Volume I addresses the Naval Nuclear Propulsion Program and any work done at HPS on nuclear-powered ships. Volume II addresses all other uses of radioactivity (G-RAM) at HPS. Uranium-235 is listed as a radionuclide of concern because of the radiation associated with the atomic weapons testing and decontamination of ships that participated in those tests.

14. **Comment:** **Page 17, paragraph 2: There are other places around the San Francisco B ay where the Navy used radioactive materials and may have contaminated the bay sediments and water. Mare Island Naval Shipyard, in adjacent San Pablo Bay was used for servicing of nuclear submarines. Naval Air Station Alameda, located directly across the bay from HPS, was also used for nuclear propulsion work. The impacts of all of these former Navy sites on the bay should be considered collectively. It is particularly important to recognize that it will be difficult to establish local background radioactivity levels for underwater areas, as tidal mixing may have caused the entire bay to be affected by Navy use of radioactive materials.**

Response: Just as the HPS HRA is a two-volume set, there were similar HRAs prepared for the former Mare Island Naval Shipyard and Naval Air Station Alameda. Volume I of these HRAs address the Naval Nuclear Propulsion Program and any work done at those locations on nuclear-powered ships. These HRAs also address Bay environmental sampling conducted by Navy.

15. **Comment:** **Page 17, paragraph 3: It is important to evaluate the effect that contamination at all parcels will have on the groundwater. In addition, if contaminants were washed through the drainage system, pipe seepage likely caused an additional infusion of radioactive liquids into the subsurface soil. If they are present in subsurface soil, these contaminants are also likely to slowly migrate into the groundwater.**

Response: The Navy recognizes the potential contamination of groundwater. As stated previously, the Navy will review the assessments of contamination potential, potential contaminated media, and potential migration pathway during preparation of the Final HRA. The Navy will consider your comments during this review.

RESPONSES TO COMMENTS ON THE HUNTERS POINT SHIPYARD, SAN FRANICSCO, CALIFORNIA "DRAFT FINAL HISTORICAL RADIOLOGICAL ASSESSMENT, VOLUME II, USE OF GENERAL RADIOACTIVE MATERIALS, 1939-2003" SUBMITTED BY MR. LYNNE BROWN HPS RAB MEMBER

This document presents the Navy's responses to comments from Mr. Lynne Brown, Restoration Advisory Board member, on the "Draft Final Historical Radiological Assessment [HRA], Volume II, Use of General Radioactive Materials 1939-2002, Hunters Point Shipyard [HPS], San Francisco, California," dated February 2004. The comments were included in an electronic mail dated 13 June 2004, to Laurie Lowman, Director Navy LLRLW and Radiation Program Support, Naval Sea Systems Command Detachment, Radiological Affairs Support Office.

1. **Comment:** **We never received a definitive answer on where the dismantled NRDL Labs were placed, we understood from earlier presentations that the demolished labs never left Hunters Point Naval Shipyard. I presume that comment will be included in the current HRA when it is released in draft final format.**

   Response: The exact location of the disposition of dismantled Naval Radiological Defense Laboratory buildings has not been determined. Building debris exists in Installation Restoration Sites 01/21 and 02, and there is a possibility that the materials may have been used as fill in those areas but this has not been confirmed in historical documents.

   The fact that the disposition of the building debris is unknown will be included in the Final HRA.

RESPONSES TO COMMENTS ON THE HUNTERS POINT SHIPYARD, SAN FRANICSCO, CALIFORNIA "DRAFT FINAL HISTORICAL RADIOLOGICAL ASSESSMENT, VOLUME II, USE OF GENERAL RADIOACTIVE MATERIALS, 1939-2003" SUBMITTED BY MR. MAURICE CAMPBELL HPS RAB COMMUNITY CO-CHAIR

This document presents the Navy's responses to comments from Mr. Maurice Campbell, Restoration Advisory Board Community Co-Chair, on the "Draft Final Historical Radiological Assessment [HRA], Volume II, Use of General Radioactive Materials 1939-2002, Hunters Point Shipyard [HPS], San Francisco, California," dated February 2004. The comments were included in an electronic mail dated 4 June 2004, to Laurie Lowman, Director Navy LLRLW and Radiation Program Support, Naval Sea Systems Command Detachment, Radiological Affairs Support Office.

1. **Comment:** **Please add the following maps to both the Parcel A FOST Revision 2, Hunters Point Shipyard and the HRA the following maps show a series of buildings on Parcel A including the D Series Buildings, and others that should be investigated fully. The following USGS MrSid Image Survey Image Viewing link provides comprehensive viewing including zooming of the Shipyard in 1946. http://bard.wr.usgs.gov/mrsid/bin/show.pl?client=sfbay&image=sf_1946..sid This will help both the community, and your historical quest for data and information, also the planning for future use.**

   Response: The 1946 U.S. Geological Survey maps will be included in the Final HRA. It should be noted that there were five D Series Buildings (D-19, D-20, D-21, D-22 and D-23) that were formerly used by the shipyard and the Naval Radiological Defense Laboratory. These buildings were on the hill above the shipyard and were not located in Parcel A.

RESPONSES TO COMMENTS ON THE HUNTERS POINT SHIPYARD, SAN FRANICSCO, CALIFORNIA "DRAFT FINAL HISTORICAL RADIOLOGICAL ASSESSMENT, VOLUME II, USE OF GENERAL RADIOACTIVE MATERIALS, 1939-2003" SUBMITTED BY MS. DEBORAH B. SANTANA, PH.D.

This document presents the Navy's responses to comments from Deborah B. Santana, Ph.D., Associate Professor, Ethnic Studies Department and Environmental Studies Program, Mills College, Oakland, California, on the "Draft Final Historical Radiological Assessment [HRA], Volume II, Use of General Radioactive Materials 1939-2002, Hunters Point Shipyard [HPS], San Francisco, California," dated February 2004. The comments were included in an electronic mail to Keith Forman, Base Realignment and Closure Environmental Coordinator, Naval Facilities Engineering Command, Southwest Division (SWDIV), dated 28 May 2004.

1. **Comment:** **Following the suggestion of Ms. Laurie Lowman at the May 27, 2004, Hunter's Point Naval Shipyard RAB meeting, I am directing this comment to you regarding the Draft Historical Radiological Assessment.**

I have had a chance to look at the draft document. I believe that the details offered regarding specific activities of the shipyard over time are extremely useful for helping determine what types of materials might be found at the shipyard and the possible risks to human health and environment. One particular example regards the activities carried out during Operation Crossroads, the contaminants to which the ships and crew were exposed, and the activities carried out with those ships while at the Hunter's Point Naval Shipyard.

During the RAB meeting of May 2003 I asked Mr. Doremus whether any ships that had participated in Operation Hardtack I in 1958 (which was a much larger series of nuclear weapons tests than was Operation Crossroads, and he agreed to have that investigated. During the RAB meeting of June 26, 2003 Ms. Lowman confirmed that at least one ship that participated in Operation Hardtack I, the USS KILLEN, was towed to the Hunter's Point Shipyard, where some experiments were conducted.

During the RAB meeting of July 24, 2003 you stated that "the material that Ms. Lowman has presented regarding the USS KILLEN will be included, in detail, in the HRA" (minutes, p.8). Unfortunately, I have not found that information in the Draft HRA. I believe that those details may be as helpful as the others (regarding Operation Crossroads and other activities) that shed light on possible areas of historical radiological concern in the Shipyard. I realize that my comments come to you a little late, yet I am encouraged by Ms. Lowman's interest in receiving them, so that she may follow up on this issue.

Response: OPERATION HARDTACK I was a series of 35 nuclear weapon tests conducted by the United States in the Pacific Ocean in 1958. Three destroyers were used as target ships for some of the tests. These ships were towed back to the United States. Two were dropped off at Pearl Harbor and one, the USS KILLEN, was returned to Hunters Point. The exact berthing location, length of stay, and types of work done on the ship while at HPS are unknown. The USS KILLEN was later used as a target ship for conventional weapons and eventually sunk off the coast of Vieques, Puerto Rico, where it remains today.

Numerous ships that participated in U.S. nuclear weapons tests were returned to HPS. However, very limited information has been found about the USS KILLEN and other ships during their time at HPS. It is known that the Naval Radiological Defense Laboratory worked with these ships but the exact berthing locations are unknown. Therefore, as a conservative measure, the Navy has identified all areas at HPS that could have been associated with these ships as radiologically impacted. This includes all drydocks and pumps and discharge tunnels, ship's berths, the Gun Mole Pier, and Parcel F (underwater areas).

The information on the USS KILLEN will be included in the Final HRA.

RESPONSES TO COMMENTS ON THE
HUNTERS POINT SHIPYARD, SAN FRANICSCO, CALIFORNIA
"DRAFT FINAL HISTORICAL RADIOLOGICAL ASSESSMENT, VOLUME II,
USE OF GENERAL RADIOACTIVE MATERIALS, 1939-2003"
SUBMITTED BY DR. AHIMSA PORTER SUMCHAI
HRS RAB MEMBER AND RADIOLOGICAL SUBCOMMITTEE CHAIRPERSON

This document presents the Navy's responses to comments from Dr. Ahimsa Porter Sumchai, on the "Draft Final Historical Radiological Assessment [HRA], Volume II, Use of General Radioactive Materials 1939-2002, Hunters Point Shipyard [HPS], San Francisco, California," dated February 2004. The comments were included in electronic mails (e-mail) to Keith Forman, Base Realignment and Closure Environmental Coordinator, Naval Facilities Engineering Command, Southwest Division (SWDIV), dated 27 April 2004, 28 May 2004, and 3 June 2004. Some comments were duplicated in later e-mails. These comments have been combined for brevity.

1. **Comment:** From 27 April 2004 e-mail, **Storm Drains and Sanitary Sewer System Impacted Basewide and Parcel A SI-50 investigation.**

The HRA identifies an impacted site as being one with potential for radioactive contamination based on historical information. Further, the HRA in its section on Regulatory involvement 5.4 states that NORM and NARM were used throughout the shipyard and that these materials were not controlled in the same manner as licensed radioactive materials. The HRA confirms the fact that low level radioactive waste was disposed of in the drain and sanitary sewer systems of NRDL laboratories. The principal laboratories of NRDL relocated to Parcel A of HPS and included Buildings 815, 816, 821 and buildings of the 800 series on Parcel E adjacent to Crisp Avenue.

The Parcel A SI and RI investigations consisted of collection and review of information, site visits and sample collections. Sites were surveyed for VOC's, SVOC's, pesticides and PCB's, petroleum products and metals. The Parcel A ROD and RI report do not identify any analysis for radionuclides and, in fact, specifically states that sediment analysis was not conducted, although it was recommended. The systems were studied for the SI investigation from April to August of 1993, before the extent of potential radiological contamination was recognized.

The Parcel A storm drains and sanitary sewer systems must be incorporated in the Basewide Impacted Area designation RASO has assigned to the HPS Storm Drain Lines per Section 8 Findings and Recommendations of the HRA 8.3.6.

Response: The Parcel A storm drains and sanitary sewers were not included as an impacted site because:

- The Parcel A-impacted site buildings (Buildings 816 and 821) have been radiologically released by the Navy and the State of California Department of Health Services.
- The Formerly Used Defense Sites (Buildings 815, 820, 830, and 831) and Buildings 813 and 819, which were formerly located in Parcel A, do not drain to sanitary sewers or storms drains that are on Parcel A.
- The sanitary sewers and storm drains in streets that serve as borders between Parcel A and other parcels (King Avenue, Robinson Street, Fisher Avenue, Spear Avenue, and Crisp Avenue) are not included within the confines of Parcel A.
- The only sanitary sewers and storm drain lines within the confines of Parcel A are associated with non-impacted sites and do not need to be included in the Final HRA as part of the basewide impacted sites.

2. **Comment:** From 27 April 2004 e-mail. **The HRA defines a non-impacted site as being one, "based on historical documentation or results of previous radiological survey information, where there is no reasonable possibility for residual radioactive contamination." The Parcel A RI report and ROD confirm three sites were investigated on Parcel A, one at SI-19 and two are RI-59 JAI were "black beauty" sandblast grit was discovered that did not undergo radiological analysis and characterization for the presence of radium 226 and its daughters or fission products of plutonium. Thus, these sites cannot be designated non-impacted and at minimum are classified historically as MARSSIM Class 2 impacted areas - "site with potential for radioactive contamination but contamination is not expected to exceed release limit". The HRA identifies that IR-14 was the site of sandblast deposits that were analyzed and found to contain radium 226 and its daughters in concentrations exceeding background levels. Thus, IR-59 JAI must be included in the Phase 5 Radiological Investigation Protocol.**

Response: As stated in the HRA, impacted sites include:

- Sites where radioactive materials were used or stored
- Sites where known spills, discharges, or other unusual occurrences involving radioactive materials have occurred or may have occurred that could have resulted in the release or spread of contamination
- Sites where radioactive materials might have been disposed of or buried

The identification of sandblast grit is not a reason for designating a site as impacted, even though some types of sandblast grit are know to contain naturally occurring radioactive materials that are indigenous to the grit.

As documented in the Parcel A remedial investigation (RI) report, sandblast grit was discovered at SI-19 (Officer's Club) and Installation Restoration Site (IR)-59 JAI (Residential Area) in Parcel A. Radiological analysis of the grit at SI-19 showed no contamination. The sandblast grit at IR-59 JAI was not tested for radioactive contamination. The sandblast grit at SI-19 had been used as fill in two landscaped medians. The sandblast grit at IR-59 JAI had been used as fill to repair a water pipe break. Once discovered, the sandblast grit was removed at both sites. As neither site had a history of radiological activity the sites will not be considered impacted.

IR-14 was investigated during the Phase I Investigations in 1991 for the possibility of radium-containing devices. No radium devices were found, but deposits of sandblast grit were identified throughout IR-14 that had radiation levels that were 50 percent above background. IR-14 is included in the HRA under the Site of Former 500 Series Buildings and is recommended for further investigation.

3. **Comment:** From 27 April 2004 e-mail. **Table 6-1 of the HRA identifies HPS Impacted sites. It deliberately excludes Buildings 816, 821 and FUDs site 815 on Parcel A for political reasons, no doubt. One a site has been designated impacted and remediated it remains impacted. Therefore, Table 6-1 must be corrected to include the Parcel A sites designated as impacted in other sections and tables of the HRA.**

Response: Table 6-1, Sites Impacted by G-RAM [general radioactive material] Use by the Shipyard, identifies those buildings specifically affected by the shipyard use of G-RAM. The shipyard did not use G-RAM in Buildings 816, 821, or 815. Those building are included in Table 6-5B, Sites Impacted by NRDL [Naval Radiological Defense Laboratory] Use of G-RAM After 1955.

4. **Comment:** From 27 April 2004 e-mail. **The HRA represents the comprehensive 64 year history of radiolological operations conducted by the U.S. Department of the Navy and its contractors at the Hunters Point Shipyard from 1939 to June of 2003. Its Assessment Summary in section 1.5 and Conclusions in Section 9.3 must accurately reflect the historical findings of this period. Thus the statement in the Overall Conclusions section, "to date, no evidence for potential airborne contamination has been found" must be corrected in view of the following facts documented in the HRA:**

a. **Operations CrossRoads history documented the burning of 610,000 gallons of fuel oil contaminated with plutonium fission products between April and August of 1947 at a rate of 20,000 gallons a day. Thus the "potential" for airborne contamination and deposits of radionuclides on the base in certainly documented.**

b. **Radon gas has been detected along the Parcel E shoreline and, indeed, the Parcel E Radiation Risk Assessment includes calculations to assess the health risk of radon gas exposure. This is documented in the HRA. Radon gas, thus, is a source of potential airborne contamination at HPS.**

c. **The HRA has provided historical documentation that tritium gas was detected at Building 815.**

d. **Scientific documentation exists to support that radiation levels are elevated downwind from fires at Nuclear facilities. Thus, radiation contamination in the Parcel E landfill and at HPS sites where a series of fires have been documented by HPFD and SFFD every summer and fall for the last four consecutive years raises the risk of "potential" airborne contamination by radionuclides documented to have been disposed of in the Parcel E industrial landfill and potential sources of radiation contaminated media on the base.**

Response: The overall conclusions in Section 9.3 represent the assessment of the impact of historical radiological operations on HPS and the surrounding community today. During this assessment, the Navy carefully considered the possibility for airborne radioactive contamination at impacted sites and surrounding areas. This assessment included historic instances of airborne contamination from the standpoint of how it would affect a site today and an assessment to determine if current radiological conditions at a site would warrant a concern that radioactive contaminants could become airborne. This assessment found that the potential for residual radioactive contaminants becoming airborne without purposeful disturbance is negligible. The following addresses the site-specific concerns.

a. Section 6.2 addresses the burning of 610,000 gallons of contaminated fuel oil in 1947. The resultant airborne concentration of radioactive contaminants at that time was extremely low. The specific site of fuel burning is not known. As a conservative measure, both power plants at HPS have been identified as impacted sites to address any possible residual contamination as the result of the fuel burning. However, there is no physical mechanism for these low-level contaminants to be of concern as airborne contaminants today.

b. Radon gas has been detected in Parcel E. However, the levels were low and the gas is readily dispersed by prevailing winds at the site.

c. Tritium gas was not measured at Building 815 even though tritium was used in the building. Particulates were measured for tritium and very low levels were found. Particulates were contained in the building and there is no concern for airborne contamination that would affect HPS or the neighboring community.

d. Fires can cause radioactive contaminants to become airborne if significant amounts of radioactive materials are involved in the fire. The brush fires that typically occur on the surface of a landfill do not create airborne radioactivity. Subsurface fires in the landfill at HPS have the potential to generate airborne contaminants because the landfills contain radioluminescent devices and air monitoring should be conducted during the fires if they occur again. However, because significant quantities of radioactive materials have not been found in the landfill the levels of airborne radioactivity would be low and would be quickly dispersed to the air.

All future investigations that disturb potentially contaminated or contaminated materials will include safety measures to minimize the spread of airborne contamination as well as air monitoring to track any unanticipated airborne contamination. Should airborne contamination be identified, all work will cease until additional safety measures are in place to minimize or eliminate this concern.

5. **Comment:** From 27 April 2004 e-mail. **The Overall Conclusions section 9.3 states, "to date, potential pathways for contamination migration remain within the impacted areas. No pathway has been identified for contamination to migrate off the HPS site." Please correct this misstatement. The presentation and documentation of radiological hazards at the Metal Debris Reef and Metal Slag Area confirm the risk of migration of radioactive materials disposed of into the San Francisco Bay.**

a. Additionally, the Storm drain and sanitary sewer system which operated as a combined system for the entire 21 year history of NRDL operations and was the site of disposal of low level radioactive effluents by NRDL scientists, drains by over 40 outfalls into the San Francisco Bay.

b. Additionally, HPS groundwater pathways have been documented to contain low level radioactive materials. These also drain into San Francisco Bay.

The Parcel A IR-59 JAI investigation site and the SI-50 site must be classified as MARSSIM Class 2 or Class 1 impacted areas and included in the Phase 5 Radiological Investigation protocol. The Base Wide Impacted Storm Drain system must include the Parcel A SI-19 investigation and a full scoping and characterization study performed because the HRA identifies that the storm drains of highest risk are

those used by NRDL laboratories and the principal laboratories of the NRDL were cited on Parcel A and the RI report documents no analysis for radionuclides was conducted in the years 1993 to 1995.

Response: The referenced overall conclusion "To date, potential pathways for contamination migration remain within the impacted areas. No pathway has been identified for contamination to migrate off the HPS site" is considered a valid statement. HPS includes approximately 936 acres about half of which are under Bay waters. The HRA includes the underwater property (Parcel F) as an impacted site. Any migration of contamination from the radioactive contamination at the Metal Debris Reef or Metal Slag Area would be to Parcel F. The potential for contamination to migrate from Parcel F is extremely remote.

a. The HRA identifies all storm drain lines, including outfalls, and sanitary sewer lines, as impacted sites, except for those in Parcel A. The storm drain outfalls would drain to Parcel F, which is also an impacted site.

b. The groundwater pathways will be addressed as appropriate for each impacted site. Again, these would drain to Parcel F, which is an impacted site.

The history of the IR-59 JAI site and the SI-50 (storm drains and sanitary sewers) in Parcel A does not provide evidence for designation of these areas as impacted sites and therefore there is no requirement for Multi-Agency Radiation Survey and Site Investigation (MARSSIM) surveys. While the SI-19 site (Officer's Club) investigation did remove sandblast grit, no radioactive contamination was found and the site has no radiological history associated with the basewide storm drain system.

The HRA identified four impacted sites within the boundaries of Parcel A. The boundaries of Parcel A have been realigned to move two of those sites, Buildings 813 and 819, to Parcel D. This will be reflected in the Final HRA. The remaining two impacted sites, Buildings 816 and 821, have been radiologically free released by the Navy and the California Department of Health Services. The storm drains and sanitary sewers associated with Buildings 816 and 821 are outside the boundaries of Parcel A and will be investigated as part of the storm drain and sanitary sewer investigation on Crisp Avenue. The other NRDL buildings on Crisp Avenue, Buildings 815, 820, 830, and 831 are Formerly Used Defense Sites and not part of Parcel A. While the storm drain and sanitary sewer lines associated with impacted sites, including those used by NRDL, have demonstrated potential for radioactive contamination, this does not include the storm drains and sanitary sewer lines on Parcel A.

6. **Comment:** (Listed as Comment 1 on 28 May 2004 e-mail). **The Draft Final Historical Radiological Assessment Section 2 - Introduction reads as follows, "The Navy uses HRA's to document the extent of past radiological operations at a specific site and residual effects these operations may have had on the site. HRAs meet the protocol for a Preliminary Assessment (PA) as defined by the EPA's CERCLA and can be used to support removal actions within the CERCLA process."**

Accepting this to be the case, the completion of the HRA represents step one in the nine step CERCLA process as it specifically pertains to radiological operations at HPS. I would like RASO to request that the regulators and the Navy hold on all conveyance efforts at HPS pending full completion of step one in the CERCLA process for radiological operations at HPS.

Response: The HPS HRA documents the radiological history of HPS and will be the basis for establishing future radiological investigations at the site within the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. By meeting the protocol of a preliminary assessment, the HRA serves as step one of the CERCLA process. Radiological Affairs Support Office (RASO) is an integral part of the Navy team working to radiologically free release impacted sites at HPS and works with the regulatory agencies to ensure no property is conveyed until radiological issues are properly addressed. Full completion of step one in the CERCLA process for radiological operations at HPS will be complete with the publication of the Final HRA in August 2004.

7. **Comment:** (Listed as Comment 2 on 28 May 2004 e-mail). **RASO and the Navy have argued that the sanitary sewer system and storm drain lines on Parcel A will not be included in the Basewide Impaction full scoping survey recommendation because no sources of radiological release have been identified in the upland Parcel A region. Why then is Building 819 the sewage lift station formerly used as Sewer Pump Station A considered impacted? Doesn't the sewer system from upland Parcel A ultimately drain into Sewer Pump Station A? The HRA states in section 8 that radionuclides of concern at this building are cesium 137 and radium 226 because, "prior to 1974 there was a high potential for release of permissible quantities of licensed radioactive material and radium to the sanitary sewage system from shipyard or NRDL operations." Please explain, I am genuinely confused.**

Response: Building 819 is considered a radiologically impacted site because of the radioactive contamination found in the storm drain lines and sanitary sewers on Cochrane Street. The sanitary sewers in upland Parcel A also drain to Building 819; however, they are not considered radiologically impacted because there were no operations involving radioactive materials within the upland area of Parcel A.

8. **Comment:** (Listed as Comment 3 on 28 May 2004 e-mail). **Please identify what the Quonset huts and temporary structures that were sited in the now vacant lot of IR-59 JAI were used for. These structures were serviced by a sanitary sewer system that connected to Innes Avenue and sandblast was discovered during backhoe excavation of the sanitary sewer system according to the 1995 RI report.**

Response: The IR-59 JAI site measures 153 by 70 feet and is located among residential lots in Parcel A. Between 1935 and 1948, four Quonset huts were constructed on IR-59 JAI. These Quonset huts had been removed by 1977, but the exact time of removal is unknown. Temporary structures were erected between 1981 and 1983. At the time of the 1995 RI, outlines of six structures formerly located on the lot, and a retaining wall remained on the site. The exact use of the Quonset huts is unknown but it is reasonable to assume they were used as temporary housing due to the time frame and location. Use of the temporary structures is known. The sandblast grit was used as fill when repairs were made to a water pipe break.

9. **Comment:** (Provided in 3 June 2004 e-mail). **I would like to make a formal request that you respond in both the Draft Final HRA and in the Draft Final FOST to the 1946 photos of the base Mr. Maurice Campbell has uncovered and to the possibility of an NRDL laboratory in the D series buildings and its potential for drainage into Pump station A on Parcel A.**

Response: The U.S. Geological Survey aerial photographs submitted by Mr. Campbell are important historic artifacts and will be included in the Final HRA. The aerial photographs will be compared with historical maps to try and identify the buildings on the photographs. It should be noted, however, that the aerial photographs have limited value because there are no building identifications associated with the photographs.

Historical records indicate that there were five D series buildings (D-19, D-20, D-21, D-22, and D-23) located up on the hill outside of the current HPS property. The shipyard used Buildings D-22 and D-23. Buildings D-19, D-20, and D-21 were used by NRDL for administrative offices and warehousing of general supplies for a limited period. There is no record of the use or storage of radioactive materials in these buildings. The shipyard demolished the buildings in the 1950s, and civilian housing has since been constructed on the site. Based on the historical evidence, it is reasonable to conclude that there is no potential for the presence of radioactive materials and the D series building are not included as impacted sites.

There is no evidence that sanitary sewer lines from the D series buildings drained to Building 819 (Pump Station A). However, if they did, it would not be of concern, as the buildings have not been designated as impacted sites.